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RABIES*

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Under war-time conditions, the precautions normally taken in regard to the importation of dogs are difficult to enforce so that the security enjoyed in the prevention of the introduction of rabies may be impaired. This note has, therefore, been prepared on the experience gained during the last outbreak in this country and is intended for the guidance of veterinary surgeons engaged in canine practice.

Dogs affected with rabies rarely survive a week after the onset of symptoms, and therefore in any doubtful case the dog should be suitably confined, and not destroyed, because diagnosis is thereby facilitated and cases of hysteria are more easily differentiated. Dogs suffering from the dumb form of rabies are frequently not at first suspected, although exhibiting paralysis of the jaw (" dropped jaw ") and of the hind-quarters.

Rabies conjures up in the mind of the person not conversant with the disease a picture of a dog in an absolute state of frenzy, a fearsome object to behold and one from which everyone rushes in terror. One imagines foam flying from the mouth during the mad rush, the teeth snapping, and the eyes wild and staring, looking for the next victim. In actual practice, this picture is seldom exhibited. A common idea is that all rabid animals evince a desire to bite anything and everything. A certain percentage of rabid dogs could hardly be made to bite. Others show a decided propensity for attacking their own species only. In one case the rabid dog (an Irish terrier) never attempted to bite any other animal, all his animus being against the human species of whom he attacked and bit about seventeen.

A tremendous responsibility is thrown on any veterinary surgeon called in to a suspected case. In the first place, it is the duty of practitioners to take every precaution to ensure that the suspected animal is not given the opportunity of endangering human life or the lives of other animals.

One will naturally ask, " What are the best safeguards ? " The ideal is a well-lighted observation-kennel with close boarded, or better still, galvanised iron sides without any projections which the suspect can gnaw or bite. There should be a small enclosure safeguarding the entrance to the kennel proper, so that should the animal escape through the kennel door there is the added safeguard of another door to negotiate. The door, both of the enclosure and the kennel, should open inwards. Failing the ideal, the animal should be secured with a well-fitting wire cage muzzle, a collar which cannot be slipped and a stout chain (not leather lead) in some suitable enclosed building where contact with other animals cannot take place. It is not sufficient to request the owner to take the dog home and isolate it. The practitioner must assure himself that the animal is properly isolated.

Rabies, being essentially a disease affecting the nervous system, postulates a great variety of symptoms.

It is of the utmost importance to obtain the dog's history from the owner, and reasons for suspecting the animal, always bearing in mind that a clinical examination in some cases fails to detect any symptoms of disease or illness whatever at the time of the examination, and one is inclined to dismiss the case with the opinion that the owner is romancing or labouring under delusions consequent on the presence of cases in the district.

The most important symptom is an alteration in disposition, and one which should always be looked upon with grave suspicion. The docile animal may become snappy and dangerous ; the ferocious brute may evince a desire for human companionship. The clean house dog may suddenly develop filthy habits, defaecating and micturating all over the house as if these natural functions had suddenly become uncontrollable—the disposition of the animal being entirely reversed to the wonder and astonishment of the owner.

Restlessness and a desire to wander is usually very noticeable, the animal not being able to find a resting place to his liking. Sometimes it is a continual wandering round the room as if looking for a means of escape, at other times it would appear as if the animal could find no comfortable resting place, but will suddenly jump up, walk a few yards and flop down again, repeating the performance again and again. The desire to wander varies and in some cases is entirely absent. The wanderer is the dog that does most of the damage. Frequently the wandering dog practically takes a bee line, and will cover anything from 20 to 40 miles in the course of a few hours. Such an animal usually travels with the nose to the ground and at a steady pace. He does not look for trouble but anything crossing his path may receive a snap. The rabid dog as a rule does not stop to fight it out but is more inclined to give one or two quick snaps and pass on. Sometimes the wandering fits are spasmodic. The animal disappears from home for a few hours, returning to rest in an exhausted, ruffled condition only to wander off again in the course of the next 12 to 24 hours. This performance may be repeated

*Delivered to a meeting of the Society of Veterinary Practitioners held at York, June 28th, 1940.

several times. As a rule, when the dog returns from these shorter wanderings, the owner notices that he appears quite ashamed of himself and is inclined to hide away.

Appetite is usually in abeyance, although rabid dogs sometimes do eat.

Throat symptoms are usually present and take the form of difficulty in swallowing and apparent sore throat. Very frequently the owner brings the dog for advice with the statement that there is an obstruction in the throat, probably a bone. The throat symptoms, which are accompanied with salivation and deglutition movements, certainly seem to lend support to the owner's surmise, but with rabies in a district it will behove all practitioners to beware of these throat cases and handle them carefully before attempting to pass a probang. Salivation is very pronounced in some cases and in others entirely absent. The salivation is intermittent and it frequently happens that the dog is left apparently well in the evening and in the morning the kennel or room occupied is soaked with saliva. The animal has the power of prehension and lapping, taking foods and liquids into the mouth, but, especially in the case of liquids, if watched carefully, it will be seen that no deglutition movements are made, the liquid running out of the mouth again. Occasionally when swallowing does take place after drenching, muscular spasms are produced with loss of control of the limbs, the animal sprawls on the ground in a helpless manner and is, in fact, paralysed. The term hydrophobia is apparently a misnomer, as few rabid animals appear to fear water; it is more the reflection of light from the surface of water which gives cause for fear.

Retching and vomiting are often present.

Snapping at imaginary objects. This is usually described as "snapping at imaginary flies," the animal making snapping movements with the jaws without any object being discernible to excite the snapping.

Pain on defaecation is sometimes shown by the animal crying out during the act. The passage of bile-stained liquid faeces in the early stages is not uncommon.

Depraved appetite is seen in the swallowing of foreign bodies and in some cases the eating by the animal of its own faeces immediately after the act of defaecation.

Pain on micturition. Dogs frequently micturate in the sitting posture in the manner of a bitch, when there is acute pain during the act. The urine is voided in intermittent squirts, each squirt producing a howl of pain. If the animal immediately laps up its own urine this must be looked upon with grave suspicion.

Destructiveness is seen in the tearing up of mats or bedding and the chewing of the woodwork of the kennel or other enclosure, etc.

Hypersensitiveness and cutaneous irritation. In some cases the slightest touch of the body, and more especially the abdomen, produces howling and symptoms of great pain. The skin irritation is very often shown by the animal gnawing at various parts of the body, the favourite seats being the posterior aspects of the fore-paws, insides of thighs and anus. Frequently large quantities of hair are plucked out and litter the kennel or enclosure.

Licking of the external genitals and increased sexual desire are often present.

Irritation of the inoculation wound is fairly constant and is shown by the constant gnawing at the scar if one is present.

Altered facial expression. The expression varies in the different cases. In some there is a peculiar hang-dog look and in others a fixed stare (dropped jaw cases) which is somewhat pitiable to behold. Sometimes the expression is peculiarly ferocious. The head may be carried to one side, the eyes blood-shot and the membrana nictitans elevated. Occasional facial grimaces may be observed and strabismus is not uncommon.

A discharge from the eyes is a frequent symptom and is apt to be misleading owing to its likeness to that shown in distemper. In rabies, the discharge may be in one or both eyes, is always of a thick muco-purulent nature and in large quantity. The discharge is always thrown out quickly and one may see the animal with eyes clear and bright, but two hours afterwards there will be a thick muco-purulent film covering one or both eyes. There may be protusion of the eyeballs, or, on the other hand, the eyeballs may be sunken, the cornea lustreless, the vision impaired and great depression may be evidenced.

Lameness is a most misleading symptom and prone to throw one off one's guard. The lameness is sudden in onset, usually beginning in a fore limb, frequently intermittent and changing from one limb to another. Examination of the patient fails to reveal any cause for the lameness and one is apt to attribute it to rheumatism. Sometimes it is a decided stiffness of the limbs and pain is exhibited when the animal is made to walk. In one case an exaggerated stringhalt action in all four limbs was seen. Time, of course, throws up other symptoms of rabies.

In a large number of cases stroking of the head is much appreciated and appears to give the unfortunate animal a sense of relief, but on attempting to withdraw, the animal suddenly snaps at the retreating hand. Twitchings of local groups of muscles, especially of the head and face, are not infrequent.

Alertness is often a most noticeable symptom, the animal lying rolled up in a ball as if asleep but with a most alert, watchful expression on his face and any attempt to approach or touch it with a stick is at once countered. Some animals run round and round in circles licking the ground.

Increased friendliness is sometimes shown by the desire continually to lick the mouths of other dogs, and even the mouth of the owner. Needless to say this is a source of great danger.

The howl of a rabid dog is something quite characteristic and, once heard, is never forgotten. It is somewhat difficult to describe but apparently starts with an attempt at the normal bark followed by a hound note, eventually tailing off with a prolonged weird howl. The process is repeated again and again until the voice becomes quite hoarse.

A few words about *post-mortem* examinations may be helpful. Macroscopic findings will not enable one to say that rabies exists but in conjunction with the history may justify the making of a negative diagnosis. The presence in the stomach of foreign bodies such as stones, straw, pieces of wood, etc., and the absence of normal food material should be

regarded as highly suspicious of rabies, whereas the presence of a normal meal in the stomach is a strong indication to the contrary. The spleen may show darkened swellings at the edges or in its substance. Many other naked-eye changes may be noted such as congestion of the mucous membrane of the stomach, pharynx, larynx and fauces.

Finally, just a few remarks on sending material from suspected cases for laboratory investigation. The head should be removed by severing the neck where it joins the trunk and the head and neck should be wrapped in a cloth which has been soaked in a solution of corrosive sublimate (1-1,000). Nerve ganglia situated in the neck, as well as the brain, are needed for histological examination. The material must be well packed to prevent leakage and the package must also contain a note stating the name and address of the sender, the date of despatch and the name and address of the owner of the suspected animal.

ABSORPTIVITY OF THE SKIN

An annotation on the above subject, appearing in a recent issue of the *British Medical Journal*, states that although the primary function of the skin is undoubtedly to keep things out and not to let them in, it has been known since the beginning of the nineteenth century that various substances can be absorbed percutaneously, and attempts have been made from time to time to introduce drugs into the system through the skin. "At one time the inunction of mercurial ointment for syphilis was much in vogue. The rate at which drugs are taken up by the skin varies according to the vehicle in which they are dissolved. Water is the least satisfactory solvent, but it appears that drugs dissolved in alcohol, ether, and benzene penetrate much more easily than those dissolved in oil. Recently Eller and Wolff* have attempted by experiments on rabbits to measure the relative penetrating power of different fats into the skin. Although the human skin differs much from that of every other kind of mammal, particularly in the fact that it is almost hairless and consequently the hair follicles are relatively few and far between except on the scalp, the results of these experiments are interesting. The authors tested three groups of fats—animal, vegetable, and mineral—the kinds chosen being cod-liver oil and hydrous wool fat (animal), olive oil and coco butter (vegetable), and liquid petrolatum and petrolatum (mineral). The fats were applied by spray to areas on the backs of rabbits which had been clipped as short as possible (shaving was not employed in order to avoid trauma). Later, at intervals of two, four, and six hours, specimens were removed and stained with Sudan IV, sections were cut and examined microscopically, and the results were checked against control areas which had not been treated with fats. Penetration was estimated by the amount of fat seen along the hair follicles and within the sebaceous glands. Eller and Wolff confirm the observations of previous workers that fats permeate the skin largely along the hair shafts and into the sebaceous glands. They found in addition that liquid fats permeate the skin more rapidly than solid fats, and, as might perhaps be expected, animal fats penetrate the deepest with vegetable fats next, and mineral fats penetrating the least. In most cases the greatest penetration takes place between four and six hours after application; subsequently the quantity of fat in the deeper tissues appears to diminish, no doubt because by that time absorption is beginning to take place."

Arch. Derm. Syph., Chicago, (1939.) 40. 900.

Corrections

G. B. PURVIS, F.R.C.V.S.
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In 1932 you published a paper of mine on "Cestodes from Domestic Animals in Malaya with Descriptions of New Species"[1]. In this paper I described two new species of *Raillietina*: *viz.* *R.* (*Paroniella*) *acanthovagina* and *R.* (*Paroniella*) *southwelli*; both from the fowl.

Dr. H. A. Baylis suggested that the former might be immature *R.* (*R.*) *volzi* Fuhrmann 1905; I therefore sent him the co-type specimen and he confirmed his suggestion. *R.* (*P.*) *southwelli* Purvis 1932 is thus a synonym of *R.* (*R.*) *volzi* Fuhrmann 1905.

As regards the latter species (*southwelli*) Dr. Meggitt wrote suggesting that this might be the same as *R.* (*P.*) *rangoonica* Subramanian 1928[2]—a species of which I had no knowledge until then.

This question I also referred to Dr. Baylis, to whom I had given most of my Cestode material, with the result that he considers *R.* (*P.*) *southwelli* Purvis 1932 to be a synonym of *R.* (*P.*) *rangoonica* Subramanian 1928. Dr. Baylis sent me the following table of measurements of this species and later gave me permission to publish it.

	Subramanian.	Purvis.	Baylis.
Length (mm.)...	112	51–65	up to 135 (in balsam)
Width	0·7	1	up to 1·6 (in balsam)
Scolex diameter	0·34	0·2–0·23	0·18–0·33
No. of rostellar hooks ...	240	100–120	Probably not less than 280.
No. of rows of hooks on suckers	10–12	2–3	Probably about 18–20.

This table conveys a criticism of my own work but I have every respect for Dr. Baylis's accuracy and in matters of scientific truth I have never believed in consideration being given to personal feelings. I had no previous experience of work on Cestodes which evidently presents dangers which were not immediately obvious. The Institution where I was working gave me distinctly to understand, before I began work there, that I could not be given much time and could only be assisted by some instruction in methods and an occasional rapid visit if I should get stuck. The responsibility for the errors disclosed was, therefore, entirely my own.

References

[1]Purvis, G. B. (1932). *Vet. Rec.* **12.** 1407-1409.
[2]Subramanian, K. (1928). *Jl. Burma Res. Soc.* **18.** 78.

The *London Gazette* announces that an Order declaring the waters of the whole of the catchment area of the River Exe to be infected has been made by the Minister of Agriculture and Fisheries under the Diseases of Fish Act. Under the Order no live fish, eggs of fish or food stuff for fish may be transported from the area, except to another infected area, in which case the consent of the Minister must be obtained. The Order is to be in force for nine months unless previously revoked.

CLINICAL COMMUNICATIONS

Suspected Ragwort Poisoning in Cattle*

H. N. FERGUSON, M.R.C.V.S.
NEWTOWNARDS

The following is a report of an occurrence of this condition with which I met last spring, affecting 40 young cattle, from 10 to 15 months old, of which 30 died.

The history given was that for the past few weeks the cattle had not been thriving and were losing condition. They had been housed all winter and were fed on silage, potatoes, turnips and a little hay. Water was supplied in a tub with a tap. The bedding was peat moss litter. The silage contained the usual silage crop and some meadow grass, but a few days earlier the silage had been finished, and the cattle were receiving more hay.

On the same farm were housed about 20 fat cattle receiving the same feeding, also 30 dairy cows which were housed all winter and were fed on the same hay and silage. A number of young and fat cattle were running out all winter, but were being fed with the same silage. All these cattle were thriving well.

The first examination showed the cattle to be poor in condition; in most the hair had dropped out completely and a few were seen to be slightly constipated, the faeces being coated with mucus. A good many had depraved appetites, and were eating the bedding and chewing wood in the house.

The ventilation in the house was very poor and the cattle were overcrowded.

I gave instructions for the cattle to be turned out to grass as the weather was favourable. They were brought in for a few nights at first and then left out altogether.

A week later I was asked to see the cattle again and I found two of the young cattle to be obviously ill. These two had been brought in and were continually walking round the house with a slightly staggering gait. When stopped they pushed their heads against the wall. The eyes were staring. They were straining very severely and the faeces were very firm and black. There were occasional signs of acute pain. On examination no movement could be heard in the rumen or bowels. The pulse was fast and the temperature normal.

I gave these cattle a pint of liquid paraffin each, and left orders for them to be given one pint of the oil daily.

Two days later I saw the cattle again and found that these two animals had just died and that several more were affected in the same way, but at different stages of the disease.

The train of symptoms was as follows: at first they stopped grazing, but persisted in eating soil and old pieces of wood and bark. Later they developed the brain symptoms—staggering gait, a tendency to walk in circles, and staring eyes. There was marked constipation. Then severe straining commenced, and some developed a black diarrhoea. At this stage there was acute pain, and furious symptoms appeared—some of the cattle abused themselves badly, and most for some time before death became comatose.

I made a *post-mortem* examination on the two cattle which had died. The lesions were as follows: peritonitis with a large quantity of blood-stained serous fluid in the peritoneal cavity; petechiae on the outside of the bowel wall; oedema of the omentum and abomasal folds. The abomasum contained a large quantity of grit and shore gravel. The bowel contents were very firm and black, and contained large quantities of peat as did the rumen. There was yellow discoloration and fine cirrhosis of the liver. Haemorrhages were present in the heart muscle.

I gave a tentative diagnosis at this stage that there had been a deficiency in the diet during the winter months, productive of the depraved appetite with ingestion of large quantities of peat causing constipation. This caused a retention of gravel, etc. in the abomasum, which being consumed in small quantities in the silage, would normally have passed on through the bowels. The gravel then caused acute gastritis and peritonitis followed by death.

Three days later two further cattle died and I made a *post-mortem* examination in conjunction with Mr. James Thompson, M.R.C.V.S., finding exactly the same lesions. Mr. Thompson agreed that the case was most mysterious and inclined to my hypothesis.

I tried calcium therapy on six of the cattle showing symptoms, but without effect. Four days later one of the cattle treated with calcium died and in consultation with Mr. Lamont I made a *post-mortem* examination of this calf and found precisely the same lesions present. Samples of the stomach and bowel contents and part of the liver were taken and analysed for chemical poisons. This analysis proved negative. Also stomach and bowel contents were fed to a calf. Another calf received, by the mouth, parts of the liver, parts of the wall and folds of the abomasum minced up and made into an emulsion. Both these calves lived and seemed to thrive on this diet. This, taken in conjunction with the fact that the affected cattle were now running at grass separated only by a wire fence from another herd of young cattle which suffered no ill effects, was taken as fairly conclusive evidence that no bacterial infection was present.

Mr. Lamont and I examined the rest of the cattle and found some in all stages of the disease. About half of those affected were running a temperature of from 104° to 106°. This at first was very misleading as it suggested the possibility of bacterial infection. On *post-mortem* examination, however, acute generalised tuberculosis was proved to be the cause. This had apparently spread due to bad housing conditions, and reduced resistance of the cattle.

We then examined the farm for the presence of poisonous plants and found ragwort in abundance in the pasture. On questioning the owner we learned that there had been a considerable quantity of ragwort in the silage.

After considering the history, symptoms and *post-mortem* findings we came to the conclusion that the cattle had died from ragwort poisoning, the active principles of which are cumulative and have a delayed action.

The deaths were spread out over a period of twelve weeks, when the disease seemed to have run its course and deaths suddenly stopped. It was some considerable time afterwards before the remaining cattle started to thrive and put on condition; this may have been due to these cattle having got small quantities of the poison.

* Report presented to the North of Ireland V.M.A. at Belfast, September 6th, 1940.

During this period of twelve weeks two typical cases occurred. The subject of one was a fat bullock which had been housed all winter; the other was a cow. The history of the cow was that she had only been on the farm three weeks, had been running at grass during that time and had been given no silage. In both these cases the symptoms and *post-mortem* findings were typical. The case of the cow was baffling as it seemed unlikely that ragwort poisoning could have developed in three weeks.

It is also worth noting that on a small farm next to the one in question two cattle about 18 months old, the only cattle on the farm, died within a week, during the same period, and showing the same symptoms. These cattle were sent away and no opportunity was therefore obtained to make a *post-mortem* examination. No silage had been fed to these cattle, but a considerable quantity of ragwort was present in the pasture, and they had a run out in the daytime all winter.

It is interesting to note that South African workers, principally Robertson and Steyn, have described the incidence of ragwort poisoning in cattle and sheep showing very similar symptoms and *post-mortem* lesions to those described above.

Discussion

Mr. Lamont said that the symptoms were very similar to those produced by what was called "straining disease" in the West of Ireland, and there it was generally thought that ragwort was the cause.

Mr. Hart agreed that the case was one of vegetable poisoning, and the symptoms were very suggestive of ragwort poisoning. He was of the opinion that vegetable poisoning could produce a rise in temperature although many people claimed that it did not.

Mr. Gilmore thought it was a reflection on the profession that after the deaths of so many animals the case should be reported as a "supposed" case of ragwort poisoning. He recalled a case of "supposed" ragwort poisoning in ewes which appeared to be complicated with bracken poisoning and pregnancy disease.

Mr. Stewart said that he knew the district in which the cases occurred, and that there a fair number of horses died annually from cirrhosis of the liver. He forecasted that with the increased use of silage due to lack of feeding stuffs there would be an increased mortality in the district from ragwort poisoning.

Mr. Williamson had not seen ragwort poisoning in cattle but had observed several cases in horses. Ragwort was most poisonous after it was cut and had dried. Diagnosis was made on the finding of cirrhosis of the liver, and the recovery of ragwort from the stomach.

Mr. Ferguson, in reply, said he had nothing to add except that in this particular outbreak the "poisoning" was complicated with acute tuberculosis, and to stress the fact that a cow dying from the same condition after being only three weeks on the farm was rather puzzling and upsetting.

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Unusual Deformity in a Calf

D. W. OWEN, M.R.C.V.S.
Brecon

An unusual congenital deformity was observed in a Friesian bull calf. He was out of a Friesian cow, whose two previous calves were normal. When seen this calf was three weeks old, and except for a few eyelashes was completely hairless. The skin itself was correctly pigmented, but so thin that veins and muscle groups were visibly prominent, and any slight abrasion caused a wound. The head was small and pig-mouthed and the forelimbs were stag-kneed.

The testicles were under-developed to such an extent that they were palpated only with difficulty. In spite of the fact that the calf was sucking well and otherwise in good condition, the owner refused to try any treatment and it was slaughtered.

THE RAY FUNGI

Actinomycosis is rather rare in mankind but, as our readers will be aware, more common in animals, especially pigs. "In animals," states the *Lancet*, "actinomycotic-like lesions are most often found in soft tissues, such as the tongue and udder, and in these cases the infecting organism is usually an aerobic Gram-negative actinobacillus; infection involving bony structures is, like human actinomycosis, almost always caused by anaerobic streptothrices. Because of the strictly parasitic nature of these pathogenic anaerobic actinomyces, the one-time belief that in the human disease the streptothrix was carried in by oat or barley seeds or bits of straw has been discarded, although these agents probably favour infection by causing laceration of the mucous membrane. There is still the possibility that man may be infected from domestic animals, and it is important to know if the human and animal pathogens are biologically identical or not. Miss Dagny Erikson* has concluded from a detailed bacteriological examination of some 20 strains of pathogenic anaerobic actinomyces (15 of human origin and 5 from cattle) that the human strains are clearly distinguishable on cultural and serological grounds from the bovine. Colonies of the bovine type are smoother and softer than the human variety, and do not adhere to the medium; growth is very poor and the mycelium readily breaks up into diphtheroid forms; turbidity may occur in liquid media. But this bovine type has occasionally been isolated from human lesions just as the human type has from animals, particularly pigs, and these facts, together with the greater frequency of infection among those in intimate contact with domestic animals, must still leave as an open question the possibility of spread of infection from animals to man. It may be significant that 8 of Erikson's 15 human strains were derived from patients in the London area. That the human lesion is often due to autogenous infection with anaerobic actinomyces present in the alimentary tract is now generally accepted, and it is a pity that Erikson was unable to include strains from uninfected persons in her series.

"Erikson is an advocate of Ørskov's technique of microscopic examination of living cultures growing on the surface of solid media as the best means of studying the morphology of the streptothrices and has shown that the anaerobic strains may even develop aerial hyphae as the aerobic species do. The diphtheroid forms commonly seen in stained preparations result from the easy fragmentation of the mycelium, and have been the cause of much confusion and even mistakes in diagnosis. Whether the micro-aerophilic character of this group is due to the need for diminished oxygen tension or increased carbon-dioxide pressure is left unsettled; the zone growth in shake cultures suggests that the latter is the more important. No evidence for a filtrable form of the actinomyces was obtained. Serological typing of these organisms is extremely difficult owing to their poor growth and great granularity, and it is to Erikson's credit that after much painstaking and careful work she was able to classify the human strains into one homogeneous serological group, with no apparent affinity for the bovine species or the aerobic actinomyces. In discussing taxonomy, she suggests that the common human strain should be called *Actinomyces israeli* and the corresponding bovine strain *A. bovis*, while the aerobic actinomyces of Bostroem should, as suggested by Topley and Wilson, be named *A. graminis*."

*Pathogenic anaerobic organisms of the actinomyces group. By Dagny Erikson. *Spec. Rep. Ser. med. Res. Coun., Lond.* No. 240. H.M. Stationery Office. (1940.) Pp. 61. 1s.

ABSTRACTS

[INFECTIONS OF WILD ANIMALS WITH TUBERCLE BACILLI AND OTHER ACID-FAST BACILLI. GRIFFITHS, A. S. (1939.) *Proc. Roy. Soc. Med.* **32.** 1405-1411.]

Infection with acid-fast bacilli occurs in some species of wild animals living free, in most species of wild animals in captivity and amongst all domestic animals and human beings. Moreover, the various types of *M. tuberculosis*—human, bovine and avian—are not restricted to their special hosts but can each infect many other species. They are thus very different from the other pathogens of the species, *viz. M. leprae, M. leprae murium, M. paratuberculosis* and the strain which is the cause of an epizootic disease of voles in this country. These are highly specialised organisms and their transmission to other species of animals is rare. However, only one of these, *viz.* the vole strain, gives rise to disease macroscopically resembling tuberculosis.

It can still be said that tuberculosis due to the recognised types of tubercle bacilli is unknown amongst animals living entirely free from any contact with civilised man. Thus, although in 1937 Wells reported the widespread occurrence of a disease amongst field voles due to an acid-fast bacillus and resembling tuberculosis in its anatomical appearance, it has been found that the organism responsible differs both in cultural characteristics and in virulence from any of the three established types of tubercle bacilli. And instances of casual tuberculosis in wild animals due to recognised types of tubercle bacilli have always been in animals which come occasionally into contact with man or with domesticated animals.

Casual infections have been reported in many species but they are comparatively rare even in regions thickly populated with farm animals. On the other hand, when wild animals are held in captivity tuberculosis is of common occurrence and may assume the character of an epidemic. The disease, moreover, may be due to any of the three types of tubercle bacilli: bovine, human or avian.

Of the different orders of mammals, that of the primates—monkeys, apes and lemurs—is the most prone to infection. These are highly susceptible to both human and bovine bacilli and the natural infection may result from either type though, from their frequent contacts with human beings, monkeys are more often attacked by human than by bovine tubercle bacilli. Usually where bacilli of the bovine type have been isolated the oldest and most extensive lesions have been abdominal. In some cases, however, they have been thoracic and it is possible that this type of bacillus may be transmitted from monkey to monkey by inhalation. The avian tubercle bacillus is not virulent for primates.

As regards proneness to infection the primates are closely followed by ungulates—antelope, deer, gnu, rhinoceros, sheep and tapir, etc. Here again infection may be by human or bovine bacilli though the latter predominates. The infection in this group of animals is usually respiratory and the disease progresses much more slowly than in the primates, the lesions being generally of the fibro-caseo-calcareous variety characteristically seen in domestic cattle. The pulmonary lesions of deer, antelope and sheep, like those of the domestic goat, are very liable to break down with the formation of cavities. The human tubercle bacillus can cause in wild species of ruminants and pigs progressive tuberculosis equal in severity to that produced by the bovine type. Avian infections have apparently not been encountered in wild animals of this order.

Tuberculosis also occurs quite frequently amongst carnivorous animals in captivity—lion, tiger, bear, jackal, fox, etc. Both bovine and human, but not avian, bacilli have been incriminated and the disease is usually of the fibro-ulcerous type with a tendency to calcification. In the domestic cat naturally acquired tuberculosis appears to be caused usually by bovine bacilli to which it is highly susceptible though very resistant to human bacilli.

Amongst marsupials tuberculosis is not of very frequent occurrence although occasional cases have been recorded in the kangaroo, wallaby and opossum. In four out of five cases examined the disease was due to avian tubercle bacilli whilst the remaining case was a bovine infection. A few cases have been investigated in animals bred for fur—mink, rabbit, etc.—and they have proved to be of the bovine type.

Tuberculosis is very prevalent amongst birds living in zoological gardens and may attack birds of every species including birds of prey and ducks and geese which under ordinary domestic conditions are rarely found to be tuberculous. In all species the infection is of the avian type, but parrots kept as pets frequently develop a peculiar form of cutaneous tuberculosis occurring most commonly in the skin of the head, the lesion being in the form of a nodule which extends and ulcerates, becoming covered with a warty or horn-like excrescence. Here the type of bacillus concerned is the human.

Cold-blooded animals in captivity—fish, amphibians and reptiles—are also liable to spontaneous infections with acid-fast bacilli, though these are rarely found in cold-blooded animals living free. The acid-fast bacilli of cold-blooded animals do not form a homogeneous group, but the majority of cultures isolated have been serologically identical with *M. marinum*. Some of the strains isolated have proved pathogenic on massive injection but the naturally-occurring disease has not been reproduced.

Amongst wild animals living outside zoological gardens but coming into contact with man or domesticated animals, occasional examples of tuberculosis infection have been found in different species such as monkeys, antelopes, squirrels and even hedgehogs. Rats and mice caught in poultry yards have been found infected with avian tubercle bacilli and the possibility therefore exists of infection being conveyed from one poultry run to another by such vermin. Wild rats may also become carriers of bovine bacilli.

Amongst wild birds instances of naturally-occurring tuberculosis are more frequent than amongst free-living mammals, the infection being acquired on visits to poultry runs or through eating garbage or dead tuberculous fowls. Many different species have furnished examples though wild pigeons have never been found infected—an observation in line with the fact that tame pigeons are much less susceptible to avian bacilli than are fowls. The cases recorded include sparrows, rooks, jackdaws, crows and gulls, but in each species only one or two instances have been found, indicating that the cases are probably casual and not part of an epizootic amongst birds. As all

the species of birds mentioned may travel great distances it is obviously important for poultry farmers to prevent wild birds visiting poultry runs and feeding with the fowls.

A. R.

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[THE AETIOLOGY OF PYOMETRA IN CATTLE. (Trans. title). Kostner (1939.) *Wien. tierärztl. Mschr.* **26.** 225-237, 257-271.]

The literature is cited in evidence of the serious nature of pyometra as a cause of sterility. Schnyder has estimated that from 0·4 to 8·4 per cent. of cows in a herd may be found to be suffering from pyometra. On the aetiological aspect, the survey of Jaeger is noteworthy. He examined bacteriologically 51 cases and found the following organisms: Pyogenes (13 cases), Trichomonas (10 cases), staphylococci and streptococci (15 cases), diploccci (four cases). In nine cases no organisms were found. Other workers have noted the occurrence of these cases in which the uterine contents were sterile, and to them Kostner draws especial attention.

The present work is based on the findings in 18 cows which were slaughtered following a history of prolonged sterility and a clinical finding of fluid in the uterus. The data obtained on *post-mortem* examination are tabulated. The amount of the fluid contents of the uterus varied from 1·5 to 50 litres, but was commonly about 10 litres. In one case only was the smell strongly unpleasant. In nine of the cases remnants of a foetus could be found, and in all cases a corpus luteum resembling that of pregnancy was found in the ovaries. Bacteriological examination of the uterine fluid showed a mixed infection of staphylococci, streptococci and *B. coli* in eight cases. Trichomonas was present in four of these and also in two others, leaving eight sterile.

Material from ten of the cases was injected intraperitoneally into mice. Although four of these samples had shown bacteria on cultural examination, only two were fatal (in three and four days) for the mice. Kostner suggests that the organisms in the other two cases were of low virulence. To obtain further evidence on the significance of the bacteria, samples of the uterine fluid from three representative cases were introduced through the *os* to the uterus of eight normal cows in various stages of the reproductive cycle, and immediately *post-partum*. Two of the samples injected had been shown to contain organisms, one staphylococci and streptococci, and the other also *B. coli*, and Trichomonas, yet in no case was any abnormality detected in the uterus or ovary of the injected cows on *post-mortem* examination six weeks later.

The histological state of the uterine wall of the original cases was studied. It is described, not in terms of an inflammatory reaction, but as resembling an atypical pregnancy, and this is correlated with the presence of a corpus luteum in the ovary.

Kostner's conclusions from his work are briefly as follows. Pyometra, in the type of case he has examined, arises as a result of death of an embryo *in utero*. The uterine contents are at this stage sterile, and are likely to remain so, as the cervical mucous plug is an obstacle to the entrance of bacteria. Autolysis of the foetus and membranes occurs and the uterine contents are reduced to fluid. Emptying of the uterus does not take place as the corpus luteum of pregnancy persists, and inhibits contraction of the uterine wall. The cases which Kostner reports as having sterile uterine contents would appear to have been examined at this stage. If, as may happen, the cervical plug is dissolved, the contents may become infected; but it is emphasised that the initial change is due, not to the organisms, but to the sterile autolysis following on the death of the foetus. The author regards Trichomonas in a different light from the other organisms mentioned, considering it to be capable of causing the initial death of the foetus and so starting the cycle described.

Since Kostner believes in the essential innocence of bacteria in the aetiology and course of the disease he describes, the treatment suggested is enucleation of the corpus luteum, following upon which there is an emptying of the uterus, and a rapid return to normal.

[*Abstractor's Comments.*—(1) It is difficult to reconcile the views expressed by the author of this paper with the conventional accounts of pyometra, and it would indeed appear that, applied to some of the cases described by Kostner, the term is a misnomer.

(2) It is strange that, in an account of a condition amounting to endometritis in the pregnant uterus, no mention is made of Brucella.] J. B. B.

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[OBSERVATIONS ON POLYARTHRITIS AND ON EXPERIMENTAL ERYSIPELOTHRIX INFECTION OF SWINE. [Collins, D. H., and Goldie, W. (1940) *J. Path. & Bact.* **50.** 323-353.]

The first part of the paper includes pathological and bacteriological observations on nine pigs suffering from naturally-acquired polyarthritis, seven of which were collected from farms and two of which contracted the disease within a few days of being placed in contact with the arthritic animals.

Certain pathological features were common to all the above animals. The joint affection was a polyarticular non-suppurative arthritis of subacute or chronic form and this was associated with lesions such as pericardial effusion, pleurisy and lymphadenopathy. All failed to fatten and were stunted in growth. In two of the animals there was cultural and serological evidence of *E. rhusiopathiae* infection. In one, the organism was recovered from the pus of empyema and mediastinitis, and in another from a joint. Indirect evidence of swine erysipelas infection was furnished in four other animals by agglutination tests, but it was noted that the titres were not high. High titres were not always found even in the presence of infection, and it seems to fluctuate a great deal. In the case of one infected pig it ranged from 1 : 25 to 1 : 320. These observations confirmed the view that arthritis in pigs was frequently associated with swine erysipelas.

The second part of the paper consists of a study of arthritis resulting from experimental infection with *E. rhusiopathiae*. Eight pigs which were injected intravenously developed polyarthritis. Its onset was gradual, symptoms appearing in about six to nine weeks. The disease attained its maximum severity about six to eight weeks after it had first become apparent and at this stage animals were severely crippled, stunted and emaciated. The joints were swollen and movement was painful. Its gradual onset and prolonged activity followed either by resolution or permanent changes seemed to the authors to correspond very closely to the infective or rheumatoid forms of chronic arthritis in man. The joint lesions also showed macroscopic and microscopic similarities. The arthritis was mainly non-suppurative and there

was never any extensive destruction of bone. The chief changes consisted of granulomatous proliferation of the synovial membrane, pannus formation and infiltration of the tissues with lymphocytes—particularly beneath the synovial lining where they often formed focal collections. Inflammatory changes in the sub-chondral bone, intra-articular fibrous adhesions, some superficial erosion of cartilage and fibrosis of the joint capsule were not infrequently seen.

The fundamental difference between swine and human arthritis is that the cause of swine arthritis is known whereas we are still ignorant of the cause of human rheumatoid arthritis. In pigs the disease results from localisation in the joints of micro-organisms brought by the blood and these organisms can be recovered from the joints in certain stages of the disease. In the experimental animals the proportion of positive joint cultures diminished with the passage of time and in comparatively few cases was the organism recovered after the 20th week. Although, in human arthritis, bacteria of etiological significance are not recoverable from the joints, it is doubtful if the joint tissues have been bacteriologically examined at a stage so early in the course of rheumatoid arthritis as that in which organisms are recoverable in swine erysipelas arthritis. It is possible that rheumatoid arthritis results from the localisation of some organism in the joints and that these bacteria start tissue reactions which, as in swine erysipelas, continue in a chronic form after the organisms have been destroyed. Serological tests do not suggest that *E. rhusiopathiae* is in any way responsible for rheumatoid arthritis.

There was no evidence that either *Str. haemolyticus* or vitamin C deficiency was related to the development of arthritis in pigs. G. D.

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[EXPERIMENTAL STUDIES ON INFECTIOUS ABORTION IN MARES, VIII. (i) VACCINATION WITH LIVE CULTURES OF *S. ABORTIVO-EQUINA* FOR THE PREVENTION OF ABORTION; (ii) STUDIES OF HAEMOLYTIC STREPTOCOCCI APPEARING IN THE VAGINA OF PREGNANT AND NON-PREGNANT MARES INOCULATED WITH *S. ABORTIVO-EQUINA*. (Trans. title). Kasai, K., and Hirato, K. (1940). *Jap. J. Vet. Sci.* **11.** Pp. 20 and 37.]

These two investigations were carried on in conjunction. A series of mares were inoculated with live cultures of *Bact. abortivo-equina* of high and low virulence, and mated one to ten weeks later. The results obtained suggest that intravenous inoculation with live, highly virulent bacilli induces an appreciable immunity to infectious abortion. While there is some subsequent fever the reaction can be disregarded in the healthy adult.

Bacteriological investigation of the vaginas of treated mares showed that the appearance rate of haemolytic streptococci type A is highest following inoculation with *Bact. abortivo-equina*, other types being more common in normally delivered and normal pregnant cases. A. E. K.

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[COMBINED (SIMULTANEOUS) IMMUNISATION AGAINST TETANUS. Otten, L., and Henneman, I. Ph. (1939). *J. Path. & Bact.* **49.** 213-230.]

In a series of experiments on guinea-pigs the authors have shown that a satisfactory immunity level can be produced in four to six weeks by the combined use of formol-toxoid and hyperimmune serum. They recommend the use of three doses of toxoid, the first two being followed within 24 hours by a dose of hyperimmune serum. The experiments showed that the presence of a passive immunity had a delaying effect on the development of the active immunity resulting from the injection of toxoid. The authors say that this effect can be overcome by regulating the dosage and interval between injections, but are not sure that similar conditions would obtain in man.

[The active immunity in horses resulting from two injections of alum-precipitated tetanus toxoid, at an interval of one month, appears to be so satisfactory that the adoption of a combined method such as that described in the paper would be cumbersome and impracticable.—*Abstractor.*] A. T.

REPORT

[TANGANYIKA TERRITORY: Annual Report of the Department of Veterinary Science and Animal Husbandry. 1938. Part ii. Research.]

This report runs into 126 portfolio pages and is the most extensive account yet published of the Department's research activities. The subject matter covers a wide field and includes experiments in respect of trypanosomiasis, nutritional values of banana foliage and other native plants, soil erosion and grazing tests, effects of food and water shortage on cattle, observations on poultry and sheep husbandry, and a new method of producing clarified butter.

The principal contributor to the report is the Department's biochemist, Dr. M. H. French, whose prolific data on the various experiments indicate a volume of work of extraordinary magnitude and value. Other contributors are the pathologist, Mr. S. A. Evans; the late Director, Mr. H. E. Hornby, and the botanist, Mr. R. R. Staples. Judging by the quality of this report, a team of experts of this kind seems to be the ideal nucleus for veterinary research in the Colonies. The collaboration by these specialists has allowed a broad basis of approach to the problems that confront the Department and has given practical results of very great value.

Nowadays biochemistry and botany are often fundamental to our knowledge of animal health and disease. This is particularly so in the case of deficiency disturbances and plant poisonings. In tropical countries, like Tanganyika, these two categories of disease are exerting a material influence on the economy of livestock husbandry especially now that ways and means have been found to overcome some of the worst of the epizootic infectious diseases. Certainly the Tanganyika authorities are alive to this, and their lead in this respect might well be followed by some of the other Colonies with advantage. It is well to note that the chemist and botanist are members of the veterinary research staff and not just consultants from other departments.

The nature of the report does not lend itself to detailed comment in a short notice such as this, but we hope to give separate accounts of the various experiments in our Abstracts section in future publications. The report is suitably compiled and our colonial members would be well advised to obtain a copy for reference. W. K.

IN PARLIAMENT

The following questions and answers are among those recently recorded in the House of Commons:—

HORSES (COMPENSATION FOR LOSS)*

COLONEL CARVER asked the Minister of Agriculture what compensation is available to the owners of agricultural and other horses, respectively, which may be killed or wounded during air raids?

The JOINT PARLIAMENTARY SECRETARY TO THE MINISTRY OF AGRICULTURE (Mr. T. WILLIAMS): Under the Government's existing compensation scheme, compensation in respect of livestock, including horses, is assessed on the basis of full market value at the time of the loss and is payable at the end of the war on the highest possible scale compatible with the financial resources of the country at that time.

. . . . .

RE-HORSING

Major Sir JOCELYN LUCAS asked the Secretary of State for War whether he will give an assurance that when any units are de-mechanised and re-horsed, priority is being given to the purchase of horses in this country rather than importing horses from the United States of America or elsewhere?

Mr. EDEN: There is no intention at present of re-horsing any units.

. . . . .

PIGS (FEEDING STUFFS)

COLONEL CARVER asked the Minister of Agriculture, in view of the official policy that the number of pigs in this country must, owing to the shortage of feeding stuffs, be drastically reduced, whether such contemplated reduction is two-thirds; and whether this reduction has taken into consideration the amount of food obtained from the collection of swill, and the use of such by-products as beechmast.

Mr. R. S. HUDSON: It is estimated that the quantity of feeding stuffs available for pigs during the winter of 1940/41 may not exceed one-third of the quantity normally used for that purpose before the war. This calculation excludes swill, farm and garden waste and other bulky foods. To the extent that these are used to supplement the supplies of concentrates the numbers of pigs kept should be more than one-third of pre-war.

[*For some little time past all horse owners have been endeavouring to ascertain their position in the cases of horses killed in air raids. There has been so much uncertainty on the subject among Government Departments that Colonel Carver addressed the above question to the Minister of Agriculture on October 15th.

It may, of course, be that the scheme of compensation to which Mr. Williams made reference in reply will be further modified when Sir Kingsley Wood produces his Compensation Bill already promised.—*Editor, V.R.*]

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Oct. 30th.—**R.C.V.S. Council Meeting,** Royal Station Hotel, York, 11 a.m.

Oct. 30th.—Meeting of the Registration Committee, R.C.V.S., Royal Station Hotel, York, 2 p.m.

Oct. 31st.—Meeting of the Survey Committee, N.V.M.A., Royal Station Hotel, York, 10 a.m.

Communications for the General Secretary, N.V.M.A.

Now that the General Secretary and staff are established at 10, BORE STREET, LICHFIELD, communications should in future be addressed there instead of to 63, Lichfield Road, Sutton Coldfield.*

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*As previously notified, communications for the *Veterinary Record* should be addressed to the Editorial Representative, N.V.M.A., 85, Handside Lane, Welwyn Garden City, Herts.

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Annual General Meeting: A Correction

We regret that, in our notes on the proceedings at the Annual General Meeting of the N.V.M.A., held at Oxford on October 9th, incorrect intimation was given of the nature of the recognition then made of the services rendered to the Association by Sir Weldon Dalrymple-Champneys. Sir Weldon was elected an Honorary Member of the N.V.M.A., with all the privileges attaching thereto, and not, as stated on page 736, an Honorary Associate.

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Reproductive Disorders in Horses and Cattle

FILM TO BE SHOWN AT EDINBURGH

Veterinarians resident in Scotland who either missed the opportunity at the Yarmouth Congress, or desire a repetition of a most informative experience, will be interested to learn that Mr. Steele-Bodger, the President, N.V.M.A., will be showing the excellent film, entitled as above, at the Royal (Dick) Veterinary College, Edinburgh, at 2 p.m. on Monday next, when fourth and fifth year students are also invited to attend. It will be remembered that this film, which is of great scientific interest and—particularly at this time—of much practical importance to the clinician, was produced for the International Veterinary Congress in Zurich by the Associated Behring and Bayer works.

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Standardisation of Tuberculins for Use in the Intradermal Testing of Cattle

We are authorised to reproduce the following letter, on the above subject, received by the General Secretary, N.V.M.A.—in response to representations regarding this matter made by the Association—from Sir Edwin J. Butler, Secretary to the Agricultural Research Council:—

Agricultural Research Council,
6A, Dean's Yard,
London, S.W.1.

September 6th, 1940.

Sir,—I am directed by the Agricultural Research Council to refer to your letter of July 25th and previous correspondence, regarding the standardisation of tuberculins for use in the intradermal testing of cattle, and to inform you that this matter is still receiving the active attention of the Joint Committee of the Council and the Medical Research Council on Tuberculosis. It is regretted that a further letter was not addressed to you at an earlier date.

Under the direction of the Committee a comparative test of four samples of different types of tuberculin has recently been conducted. The Committee concluded that the results of the test warranted the immediate investigation of a purified protein derivative tuberculin and of

a heat concentrated synthetic medium tuberculin as a preliminary to the selection of a suitable preparation for adoption ultimately as a Standard Tuberculin, in the first instance on a National basis. The Committee do not propose to include work with B C G sensitised calves or cattle in their projected experiments.

Two tuberculins having been provisionally selected for further work, the next stage in the experiments concerns an attempt to establish the largest dose which can be injected into healthy cattle without producing a reaction and the smallest dose which when injected into naturally infected tuberculous bovines produces an unmistakable reaction in as nearly 100 per cent. of these animals as possible.

Further researches are in progress and contemplated, and some results are expected shortly. It is recognised that there are other subsidiary questions which will require experimental investigation.

The Council will communicate in due course to your Association any further conclusions reached which may mark an advance towards establishing a Standard Veterinary Tuberculin.

I am, Sir,

Your obedient Servant,

(Signed) E. J. Butler, *Secretary.*

The General Secretary,
N.V.M.A.,
36, Gordon Square, W.C.1.

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Legal Notes

BURDEN *v.* DARTMOUTH CORPORATION

Comments from a Legal Correspondent

1. The Official Referee in summing up this case states that the report of the County Analyst on the face of it "justified the suspicion" that the water was the cause of injury to the animals.

This may mean (*a*) that it proved that there were grounds for suspecting the water to be the cause of the illness, or (*b*) that it proved the water *was* the cause of the illness. The former argument is tenable, the latter not.

2. The Analyst's report was to the effect that the sample of liquid received "was entirely unfit for cattle to drink." But that is a veterinary question and is the very point to be proved. Mr. Tickle is an Analyst, *i.e.*, he knows how to find out the constituents of the sample supplied, but an analyst is not an expert on the effect those constituents would have on the animal body.

3. His Honour, who is also not an expert on the effects which may follow the ingestion of impure water by cattle, (*a*) expresses himself as satisfied that there was something in the water which caused dysentery and (*b*) did not think that removal from a dry to a succulent pasture would produce such sudden and violent illness. Here His Honour (*a*) forms a judgment of the "*post hoc, ergo propter hoc*" order, (*b*) expresses not a legal but a veterinary opinion.

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Illegal Slaughter of Cow Infected with Anthrax.—In a case heard recently at West Riding Police Court, Superintendent Keighley, prosecuting, said that the series of offences with which the defendants were charged were alleged to be connected with the slaughtering of a cow at Belle Vue Farm, Scammonden, on Wednesday, August 21st. John Fairbank was a farmer there, and his father (co-defendant) worked as a millhand, but was concerned with him in the work of the farm. Inquiries were made when a carcase of a cow infected with anthrax was taken to the abattoir at Huddersfield. Both defendants, said Superintendent Keighley, gave very frank statements.

It appeared that the cow did not give as much milk as usual and seemed to be off its feed on August 20th. The younger defendant kept the cow under observation, and when it collapsed he went to the mill for his father. The father, on seeing the cow, got a carving-knife, cut its throat and bled it to death. The carcase was dressed by a Ripponden butcher, who became suspicious because it had an enlarged spleen, and eventually it was taken to the Huddersfield abattoir.

Superintendent Keighley pointed out the danger that had been occasioned. He said that the infected carcase was handled by numerous people. The cow was taken suddenly ill and there must have been reason to suspect that it was suffering from some disease. In no circumstances ought Oliver Fairbank to have killed the beast. Leaflets were being sent round constantly to point out the danger occasioned in such cases. No steps were taken by defendants to inform themselves as to what the beast might be suffering from and no notice was given to the police. "I would suggest," he added, "the elder defendant thought it was a shrewd thing to bleed the animal so that he might get more money for it than if it died naturally. This man deliberately and wilfully committed this grave and very serious offence. He put in great peril many people. Twenty people had to be examined by the doctor."

He also pointed out the danger caused to other farmers' stock through the carcase having been taken away in a vehicle used for removing farm stock.

Mr. T. I. Stokes, M.R.C.V.S., an Inspector under the Ministry of Agriculture, said that as a result of the examination he made he concluded that the animal was infected with anthrax at the time it was killed.

George Sidney Taylor, Sanitary Inspector, Ripponden, stated that John Fairbank said, "They had stuck to cow to save its life." That was a well-known term. It meant that the meat would be of better quality if the animal were bled. He asked him if the cow had been suffering, and he replied, "No, it was a fine, healthy beast." Witness told him that in no circumstances must he remove any portion of the carcase.

Denis Sutcliffe, Sanitary Inspector to the Colne Valley Urban District Council, in whose area the cow was killed, said that Oliver Fairbank told him he had killed the beast because it had had a kind of fit. Witness told him he had done wrong to kill the beast.

Cross-examined: He should not have killed the beast whether fit or unfit, because slaughter was now under Government control.

Harry Wilkinson, farmer and cattle-carrier, Woodland Farm, Barkisland, said that after examining some papers he removed the beast to Huddersfield. Defendants did not mention any suspicion of disease. He would not have moved the carcase if they had.

Defendant, John Fairbank, told the Court that the cow looked "a bit starved." He put it in the field with the others, but it had a fit of some sort. Later, when he was going to start milking it had another fit. He went for his father, who got a carving-knife and bled it. He did not know it was wrong to kill the cow or to allow his father to kill it.

Oliver Fairbank said that he thought the cow was in a fit. He did not know it was wrong to kill it, or he would not have done so whatever its condition. It was a good cow.

Defendants' solicitor submitted that his clients had no knowledge that the animal was diseased.

The Bench found all the cases proved. John Fairbank was fined 20s. on each of the first two summonses (failure to notify, and carriage of carcase in the highway), and the third summons (abetting breach of the Anthrax Order in cutting skin of diseased animal) was dismissed on payment of costs, 4s. Oliver Fairbank was fined 20s. for cutting the skin of the animal, for failing to notify the police 40s., and £5, with £4 1s. 11d. costs for causing the carcase to be carried on the highway.

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"*Over-stocking*" *of Cows in Markets.*—"For ten years the Ministry of Agriculture has stressed the question of over-stocking in markets to make cows look more like dairy cows. It is a ridiculous practice, detrimental to

the cattle and cruel in many cases, and there is no common-sense reason why it should be practised."

This statement (reports the *Farmers' Weekly*) was made by Major R. Finch, Preston's Veterinary Officer, when giving evidence at Preston police court in a case in which Thomas Walkden, of Mellor Brook, was fined £10 and ordered to pay 3 guineas advocate's fee for causing unnecessary suffering to two cows by allowing them to be over-stocked with milk at Preston cattle market.

Mr. G. Hodgson, prosecuting, said the animals were in pain when they were milked at the market to give them relief, and defendant admitted that 10½ hours had elapsed since they were last milked.

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Failure of Action Against Veterinary Inspector.—At the Belfast Recorder's Court, recently, George Wilkinson, farmer, Drumaknockan, Dromore, Co. Down, sued Major David Ritchie Williamson, veterinary inspector, of the Postal Inspection Office, Albert Square, Belfast, for £5 damage sustained by plaintiff, as alleged, by reason of the defendant having carelessly and negligently examined three gilts, the property of the plaintiff, and certified them as sows, in consequence of which the plaintiff was paid at a lower scale for the animals. Plaintiff also sued for breach of statutory duty.

His Honour held that there was no evidence of negligence on the part of the defendant, and he accordingly dismissed the case. The defendant, he said, was a perfectly qualified man, and the examination had been carried out in the normal manner.

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LIVESTOCK POLICY AND FEEDING STUFFS SUPPLIES

In an announcement issued jointly by the Agricultural Departments and the Ministry of Food it is stated that the Government have recently found it necessary to limit acceptances of fat cattle and sheep at collecting centres. "The general reasons for this action, the marketing policy that farmers should pursue in the national interest during the coming months and the feeding stuffs supplies that will be available for carrying out that policy may be briefly stated (it is observed) in the following terms:—

"Prices of fat cattle increase by 10s. per live cwt. between November, 1940, and June, 1941. Similarly, from September, 1940, to April, 1941, prices of fat sheep will increase by 2¼d. per lb. Both these seasonal ranges are wider than in peace-time and are designed to give an incentive to the winter feeding of beef cattle and sheep, since the Government wish to secure a steady flow of marketings through the coming months and to avoid as far as possible a glut of supplies in the present Autumn and reduced numbers in the Spring. While animals should not be marketed in store condition, farmers are not expected to aim at a high standard of finish, and should conserve their supplies of feeding stuffs.

"In the interests of herd preservation, of land fertility and of future food supply farmers should, in particular, retain the following classes of stock:—

(*a*) Dairy animals suitable for milk production;

(*b*) Pedigree stock, the slaughter of which is not necessary on grounds of disease or otherwise.

(*c*) Ewes, gimmers and ewe lambs necessary for flock mantenance.

(*d*) Yearling beef cattle suitable for further feeding.

(*e*) Heifer calves likely to make useful dairy or beef animals.

It is hoped that farmers will give full co-operation in withholding these classes of stock; if they are offered at Collecting Centres in large numbers, it will be necessary in the national interest to restrict the number accepted for slaughter.

"It is appreciated that the above policy depends on adequate supplies of feeding stuffs being available. No hard and fast guarantee can be given in time of war, and none will be expected; moreover, priority will be given to milk production in the allocation of supplies. Every effort will, however, be made to provide for feeders of cattle and sheep during the coming winter some 60 per cent. of the supplies of oilcake which they purchased for such stock in the winter and spring of 1938-39. The quantity of cottonseed cake will be reduced but as far as possible the deficiency will be made good by larger supplies of linseed, palm kernel and coconut cake. A more even distribution of supplies than was possible last winter can be expected. With the increased supplies of home-grown grain and of fodder crops now available on farms, and with more economical feeding, farmers generally should be able to maintain their normal head of cattle and sheep and to market them regularly through the coming months in accordance with the national requirements."

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Outbreaks of foot-and-mouth disease have been confirmed at a farm at Barkisland, Ripponden, and at Feock, Cornwall.

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Cambridgeshire, Suffolk, and parts of Essex are added to the area comprising Norfolk and the Isle of Ely, in which, as a result of an epidemic of swine fever, the movement of swine is banned except by licence.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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THE *BRUCELLOSIS MELITENSIS* ORDER OF 1940

To the Editor of the Veterinary Record

Sir,—As an all too frequent contributor to your columns, I must apologise for again intruding upon your valuable space. On this occasion, however, I am not concerned with veterinary politics but with the recent discovery of *Brucellosis melitensis* infection of cattle in this country, which, as Professor G. S. Wilson correctly states, "may prove a matter of grave concern to both the veterinary and medical professions," and may add a new disease "to the long list with which they are already acquainted."

This fortunate or unfortunate discovery introduces a problem with which I have been confronted for many years in Southern Rhodesia, namely, whether *Brucella abortus* of cattle is infectious to man, or whether the infection of man is due to *Brucella melitensis* modified by passage through the cow. Some twenty years ago over 200 human patients were admitted to the hospitals of Southern Rhodesia suffering from a mysterious disease which I found was associated with contagious abortion of cattle. In all cases tested their serum agglutinated *Br. abortus* cultivated from Rhodesian cattle and also from cultures obtained from other parts of Africa, Great Britain and elsewhere. The infection, therefore, was, rightly or wrongly, regarded as due to *Brucella abortus*, notwithstanding the fact that similar cases had not at that time been recognised in this country where bovine abortion was far more prevalent.

The disease in Rhodesia was most severe and sometimes fatal, and it presented certain features which led the medical profession to regard it as distinct from Malta or undulant fever. The symptoms of a recent case, the writer's own daughter, are described at considerable length in the *Journal of Comparative Pathology and Therapeutics*, Vol. L., No. 4, and the *Veterinary Journal*, 94, 12. The disease is by no means a pleasant one for a veterinary surgeon to contract in the performance of his duties, which has frequently happened in many parts of the world.

A feature of the Rhodesian *Brucella* was that it would grow aerobically on primary culture—a fact which I pointed out in the *Lancet* several years ago. It was this characteristic which enable Dr. Menton, in the first place, to recognise the organism which he isolated and identified as *Br. melitensis*, although, no doubt, other far more

exacting tests were applied before he arrived at his all-important decision. It may be that the Rhodesian infection was also due to *Br. melitensis*, and that the diagnosis based upon serum reactions was at fault, but in the light of the most careful work of Ross, Orpen and other distinguished medical scientists, to say nothing of the practical experience extending over a period of twenty years, this seems improbable.

The matter is not only of serious importance to the farmer whose cattle and other animals may be summarily destroyed in terms of the hastily imposed "*Brucellosis melitensis* Order of 1940," but it places a very grave responsibility upon the veterinary surgeon who has to detect and report suspected outbreaks. Hitherto the diagnosis of *Br. abortus* infection has been based upon the agglutination test, and since the serum of an animal infected with abortion disease may agglutinate suspensions of *Br. melitensis*, the differential diagnosis of the two diseases may prove extremely difficult not only for the general practitioner but the laboratory worker. Perhaps there may be some more accurate practical test which can be employed and which will overcome this difficulty. If so, it would be helpful if one of our learned confrères skilled in the differentiation of types and strains and such refinements would immediately enlighten us as to how it can be applied "in practice." But if not, one can foresee the greatest confusions and possibly the needless destruction of many of the valuable herds in this country where contagious abortion is so appallingly prevalent, and this at a time when our dairy-stock and their products are of such enormous importance.

Yours faithfully,

Ll. E. W. Bevan.

Stringston,
Holford,
Nr. Bridgwater,
Somerset.
October 15th, 1940.

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* * * * *

TREATMENT OF STRAINED TENDONS

The "Firing" Controversy

To the Editor of the Veterinary Record

Sir,—Lest Mr. Irving should think his a voice in the wilderness, may I add mine in support of his view that the firing of horses for lameness is useless and, in all senses of the word, shocking. I speak as one who was brought up as the third generation, for entry into an old-established family practice, to view firing as part of the daily routine. I regarded the use of the cautery as cruel, and found later it delayed or rendered less effective the repair of tissue aimed at. I have therefore ceased to fire horses, and am delighted to find myself in such distinguished company, where I thought I stood alone.

Yours faithfully,

R. C. G. Hancock.

Veterinary Infirmary,
Station Road,
Beaconsfield.
October 14th, 1940.

DISEASES OF ANIMALS ACTS, 1894 to 1937, and AGRICULTURE ACT of 1937 (PART IV)

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 30th Sept., 1940	30	42	4	125	—	—	—	370	284
Corresponding period in ...									
1939	21	25	2	59	—	—	2	187	163
1938	29	36	—	—	2	2	5	35	22
1937	21	21	—	—	3	3	—	31	29
Total 1st January to 30th Sept. 1940	410	480	28	3,726	15	30	129	3,636	2,560
Corresponding period in									
1939	584	657	69	7,955	32	72	169	1,921	1,475
1938	628	995	162	20,633	44	74	125	530	403
1937	530	637	20	4,919	99	137	139	799	497

Note.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.* herds officially certified as free from tuberculosis, as at 30th September, 1940, was as follows:— England 3,804 ... Wales 9,359 ... Scotland 3,141 ... Total (Great Britain) 16,304

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